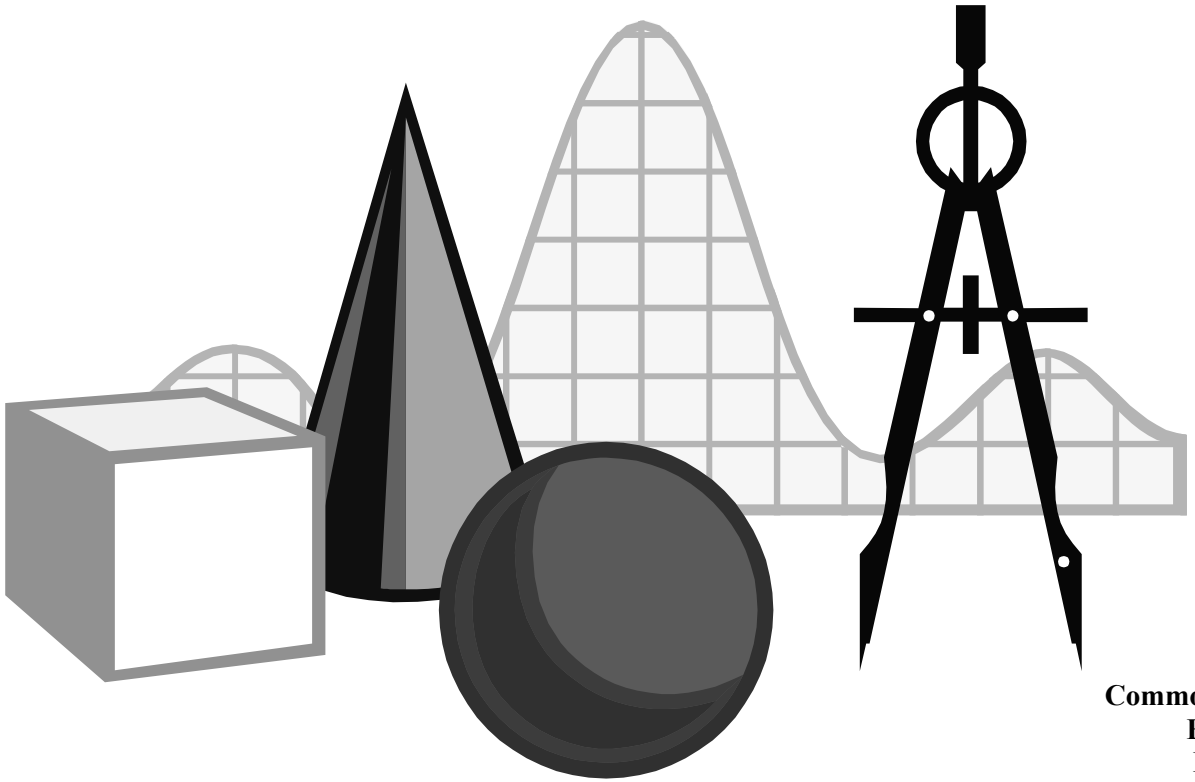
MATHEMATICS STANDARDS OF LEARNING
SAMPLE SCOPE AND SEQUENCE

Grade 3



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Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

by the

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The *Mathematics Standards of Learning Sample Scope and Sequence* and the *Mathematics Standards of Learning Curriculum Framework* can be found in a PDF and Word file format on the Virginia Department of Education's Web site at http://www.pen.k12.va.us.

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Preface

As an additional resource to help school divisions develop curricula aligned to the 2001 Mathematics Standards of Learning, the Virginia Department of Education has developed sample scope and sequence documents in kindergarten through grade eight and in core high school courses. These sample documents provide guidance on how the essential knowledge and skills that are identified in the Standards of Learning and the Standards of Learning Curriculum Framework may be introduced to students in a logical, sequential, and meaningful manner.

These sample scope and sequence documents are intended to serve as general guides to help teachers and curriculum developers align their curricula and instruction to support the Standards of Learning. Each sample document is organized around specific topics to help teachers present information in an organized, articulated manner. Also included are correlations to the Standards of Learning for that curricular area for a particular grade level or course, as well as ideas for classroom assessments and teaching resources.

The sample scope and sequence documents are not intended to prescribe how curriculum should be developed or how instruction should be delivered. Instead, they provide examples showing how teachers and school divisions might present to students in a logical and effective manner information that has been aligned with the Standards of Learning. School divisions that need assistance in developing curricula aligned with the Standards of Learning are encouraged to consider the sample scope and sequence guides. Teachers who use the documents should correlate the content identified in the guides with available instructional resources and develop lesson plans to support instruction.

Copies of the sample scope and sequence guides are available at http://www.pen.k12.va.us in both PDF and Microsoft Word formats.

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Introduction

The elementary school sample mathematics scope and sequence is based on the essential knowledge and skills identified in the Mathematics Standards of Learning Curriculum Framework. The sample scope and sequence is indexed by organizing topics reflective of the big ideas contained within the grade level curriculum and correlated to the Mathematics Standards of Learning. It is not intended to be a complete list of all the lessons that need to be taught and mastered during each elementary school grade, yet it sets forth a comprehensive set of instructional expectations that students should master to successfully achieve the grade level standards.

A primary purpose of this document is to offer teachers and curriculum developers one way to sequence and focus their curricula. Teachers may restructure the organizing topics into an instructional program that is inclusive, but better aligned with the available instructional resources (e.g., textbooks, supplemental resource materials, and technological support materials). Once the instructional materials for a scope and sequence are identified, teachers should give consideration to an alignment of the instructional time for each of the topics contained within an assessment reporting category or to the weight of the reporting category.

Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well. The resources section included in the sample scope and sequence document provides a list of manipulatives that may be used in the instructional lessons for the development of the concepts related to the content standards. It also includes page references to the Mathematics Curriculum Framework where instructional strategies and further information can be found for teaching the particular concepts and skills. Additionally, within the resource area, staff development resource documents produced by the Department of Education are listed and can be found on the Department of Education's Web site at www.pen.k12.va.us.

Assessments should support the learning of important mathematics and provide useful feedback to both teachers and students. The classroom assessment methods section in this sample scope and sequence lists a few types of the tests, tasks, and observations that should be used in assessing the student's progress. When teachers select assessment methods, they should ensure that all students have the opportunity to clearly and completely demonstrate what they know and are able to do. Whether the focus is on formative assessment aimed at guiding instruction, or on summative assessment of the student's knowledge, it is important that the teacher have a strong understanding of the mathematics being assessed and the skills to make valid inferences about a student's knowledge and understanding.

The content of the Mathematics Standards of Learning supports five goals for students: becoming mathematical problem solvers, communicating mathematically, reasoning mathematically, making mathematical connections, and representing mathematical ideas. These goals provide a framework for students to learn with understanding, actively building new knowledge from experience and prior knowledge. Therefore, throughout the study of mathematics, students should be encouraged to talk about mathematics, to use the language and symbols of mathematics, to discuss problems, to solve various types of problems in a variety of contexts, and to develop the competence and confidence in themselves as a mathematics student.

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

The Sample Mathematics Standards of Learning Scope and Sequence should serve as a resource tool for teachers and administrators for developing effective curricula, instruction, and classroom assessment. The degree of success that students have with the Mathematics Standards of Learning will depend upon the school division's implementation of an instructional program that is aligned with the Mathematics Standards of Learning.

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topics	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Whole Numbers: Representations & Relationships	K.1 K.2 K.3 K.4 K.5	1.1 1.2 1.3 1.4 1.5 1.7	2.1 2.2 2.3 2.5	3.1 3.2 3.3	4.1	
Whole Number Operations & Estimation: Addition and Subtraction	K.6	1.8 1.9	2.6 2.7 2.8 2.9 2.10 2.26	3.4 3.8	4.5 4.6	5.3
Whole Number Operations & Estimation: Multiplication and Division				3.4 3.9 3.10	4.7 4.8	5.3 5.5
Decimals: Representations & Relationships				3.7 3.12	4.2 4.4	5.1 5.2
Decimal Operations & Estimation: Addition and Subtraction				3.12	4.9	5.4
Decimal Operations & Estimation: Multiplication and Division						5.4 5.6
Fractions: Representations & Relationships		1.6	2.4	3.6 3.11 3.5	4.2 4.3	5.2
Fraction Operations & Estimation: Addition and Subtraction					4.9	5.7
Measurement: Money	K.6 K.7	1.10	2.11	3.13		
Measurement: Length	K.8 K.10	1.12	2.12	3.14	4.11	5.11

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topics	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Measurement: Weight/Mass	K.8 K.10	1.12 1.14	2.15	3.14	4.10	5.11
Measurement: Volume (Liquid)		1.13	2.17	3.14	4.12	5.11
Measurement: Temperature	K.8 K.10		2.19	3.17		5.11
Measurement: Time	K.8 K.9	1.11	2.16 2.18	3.15 3.16		5.12
Measurement: Perimeter, Area, Volume, Circumference			2.12 2.7 2.13 2.14		4.13	5.8 5.9 5.10 5.11
Geometry: Two-Dimensional (plane)	K.11 K.12	1.16 1.17	2.22	3.18 3.19	4.14 4.15 4.16	5.13 5.14 5.15a
Geometry: Three-Dimensional (solid)			2.22 2.20	3.18	4.17a, b	5.16
Geometry: Transformations			2.21	3.20	4.17c	5.15b, c, d, e
Geometry: Spatial Relationships	K.13	1.15			4.18	
Statistics: Collect, Organize, Display, Analyze and Interpret Data	K.14 K.15	1.18 1.19	2.23	3.21 3.22	4.20	5.18 5.19
Probability	K.16		2.24	3.23	4.19	5.17
Patterns and Functions: Representations & Relationships	K.17 K.18	1.20 1.21	2.25	3.24	4.21	5.20
Algebra: Representations & Relationships			2.26	3.25	4.22	5.21 5.22

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Numbers: Representations & Relationships	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-10 materials, place value charts, Digi-Blocks, counters, calculators
	▪ Investigate and identify the place value for each digit in a six-digit numeral, using base-10 manipulatives (e.g., base-10 blocks). ▪ Read six-digit numerals orally. ▪ Write six-digit numerals that are stated verbally or written in words.	3.1		
	▪ Round a given whole number, 9,999 or less, to the nearest ten, hundred, and thousand. ▪ Solve problems, using rounding of numbers, 9,999 or less, to the nearest ten, hundred, and thousand.	3.2		
	▪ Describe the meaning of the terms *greater than, less than*, and *equal to.* ▪ Determine which of two whole numbers between 0 and 9,999 is greater. ▪ Determine which of two whole numbers between 0 and 9,999 is less. ▪ Compare two whole numbers between 0 and 9,999, using the symbols >, <, or =.	3.3		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Number Operations & Estimation: Addition and Subtraction	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-ten materials, 10-frames, cubes, Digi-Blocks, linking cubes, counters, color tiles, Cuisenaire Rods, number cards, calculators
	▪ Use the inverse relationships between addition/subtraction and multiplication/division to solve related basic fact sentences. For example, 5 + 3 = 8 and 8 – 3 = __; 4 × 3 = 12 and 12 ÷ 4 = __. ▪ Write three related basic fact sentences when given one basic fact sentence for addition/subtraction and for multiplication/division. For example, given 3 × 2 = 6, write __ × 3 = 6, 6 ÷ 3 = __, and 6 ÷ __ = 3.	3.4		
	▪ Determine whether to add or subtract in problem situations. ▪ Determine whether an estimate is an appropriate solution for addition and subtraction problems. ▪ Add or subtract two whole numbers, each 9,999 or less.	3.8		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Number Operations & Estimation: Addition and Subtraction (cont'd)	▪ Estimate and find the sum of two whole numbers, each 9,999 or less, with or without regrouping, using calculators, paper and pencil, or mental computation. ▪ Estimate and find the difference of two whole numbers, each 9,999 or less, with or without regrouping, using calculators, paper and pencil, or mental computation. ▪ Solve problems involving the sum or difference of two whole numbers, each 9,999 or less, with or without regrouping.	3.8	▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-ten materials, 10-frames, cubes, Digi-Blocks, linking cubes, counters, color tiles, Cuisenaire Rods, number cards, calculators

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Number Operations & Estimation: Multiplication and Division	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**			
	▪ Use the inverse relationships between addition/subtraction and multiplication/division to solve related basic fact sentences. For example, 5 + 3 = 8 and 8 – 3 = __; 4 × 3 = 12 and 12 ÷ 4 = __. ▪ Write three related basic fact sentences when given one basic fact sentence for addition/subtraction and for multiplication/division. For example, given 3 × 2 = 6, write __ × 3 = 6, 6 ÷ 3 = __, and 6 ÷ __ = 3.	3.4		
	▪ Recall and state the multiplication and division facts through the nines table. ▪ Recall and write the multiplication and division facts through the nines table.	3.9		
	▪ Model multiplication, using area and set models. ▪ Model division, using area and set models. ▪ Solve multiplication problems, using the standard multiplication algorithm, where one factor is 99 or less and the second factor is 5 or less. ▪ Create and solve word problems involving multiplication, where one factor is 99 or less and the second factor is 5 or less.	3.10		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Decimals: Representations & Relationships	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-10 materials, 10-frames, grid paper, money, calculators, decimal squares
	• Investigate the ten-to-one relationship of the decimal places, using base-10 place-value models. • Read and write decimals expressed as tenths, which are represented with base-10 blocks, grid paper, circular fraction pieces, and/or ten-frames. • Read and write decimals expressed as hundredths, which are represented with base-10 blocks and/or grid paper.	3.7		
	• Add and subtract with decimals expressed as tenths, using concrete materials (e.g., grid paper, base-10 materials, and circular regions divided into tenths).	3.12		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Decimals Operations and Estimation: Addition and Subtraction	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-10 materials, 10-frames, grid paper, money, calculators, decimal squares
	▪ Add and subtract with decimals expressed as tenths, using concrete materials (e.g., grid paper, base-10 materials, and circular regions divided into tenths). ▪ Add and subtract with decimal numbers expressed as tenths, using paper and pencil.	3.12		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Money	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-10 materials, 10-frames, grid paper, money, calculators, decimal squares
	▪ Count the value of collections of coins and bills up to $5.00. ▪ Compare the values of two sets of coins or bills, up to $5.00, using the terms *greater than, less than*, and *equal to*. ▪ Make change from $5.00 or less.	3.13		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Fractions: Representations & Relationships	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: fractions circles, pie pieces, pattern blocks, geo-boards, Cuisenaire rods, connecting cubes, fractions strips, chips, counters
	▪ Compare the values of two fractions having like denominators where the denominators are 2, 3, 4, 8, or 10, using concrete or pictorial models. Use the terms *greater than, less than*, or *equal to* or symbols >, <, or = to compare their values. ▪ Compare the values of two unit fractions (a fraction in which the numerator is one), having unlike denominators, where the denominators are 2, 3, 4, 8, or 10, using concrete or pictorial models. Use the terms *greater than, less than*, or *equal to* or symbols >, <, or = to compare their values. ▪ Compare the values of two fractions having unlike denominators where the denominators are 2, 3, 4, 8, and 10, using concrete or pictorial models. Use the terms *greater than, less than*, or *equal to* or symbols >, <, or = to compare their values.	3.6		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Fractions: Representations & Relationships (cont'd)	▪ Demonstrate a fractional part (halves, thirds, fourths, eighths, and tenths) of a whole, using - region/area models (e.g., pie pieces, pattern blocks, geoboards, drawings); - set models (e.g., chips, counters, cubes, drawings - measurement models (e.g., nonstandard units such as cuisenaire rods, connecting cubes, and drawings).	3.11		
	▪ Name and write fractions and mixed numbers represented by drawings or concrete materials for halves, thirds, fourths, eighths, and tenths. ▪ Represent a given fraction or mixed number, using concrete materials, pictures, and symbols, for halves, thirds, fourths, eighths, and tenths. For example, write the symbol for one-fourth and represent it with concrete materials and/or pictures.	3.5, 3.11		
	▪ Add and subtract with proper fractions having denominators of 10 or less, using concrete materials and pictorial models representing area/regions (circles, squares, and rectangles), length/measurements (fraction bars and strips), and sets (counters).	3.11		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Length	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: rulers, yard sticks, meter sticks
	▪ Identify and use the following units of length: centimeters, meters, inches, feet, and yards. ▪ Estimate and then measure lengths of objects to the nearest centimeter and meter and the nearest inch, foot, and yard.	3.14		
Measurement: Weight/Mass	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**			
	▪ Identify and use the following units of weight/mass: ounces, pounds, grams, and kilograms. ▪ Estimate and then measure the weight/mass of objects to the nearest ounce and pound and the nearest gram and kilogram.	3.14		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Volume (Liquid)	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: balance scale, various weights
	▪ Identify and use the following units of liquid volume: cups, pints, quarts, gallons, and liters. ▪ Estimate and then measure liquid volume to the nearest cup, pint, quart, gallon, and liter.	3.14		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Temperature	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: celsius and Fahrenheit thermometers
	▪ Read temperature to the nearest degree from real Celsius and Fahrenheit thermometers and from physical models (including pictorial representations) of such thermometers	3.17		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Time	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: analog play clocks, digital clocks, calendars
	▪ Tell time to the hour, half-hour, quarter-hour, nearest five-minute interval, and nearest minute, using analog and digital clocks. ▪ Match the times shown on analog and digital clocks to written times.	3.15		
	▪ Identify equivalent relationships observed in a calendar, including the number of days in a given month, the number of days in a week, the number of days in a year, and the number of months in a year. ▪ Identify the number of minutes in an hour and the number of hours in a day.	3.16		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Geometry: Two-Dimensional (plane)	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: geometric shapes, pattern blocks, attribute blocks ▪ DOE Geometry for Elementary School Teachers Staff Development Guide
	▪ Identify by name, models and pictures of plane geometric figures circle, square, rectangle, and triangle) and solid geometric figures (cube, rectangular solid, square pyramid, sphere, cone, and cylinder). ▪ Identify plane geometric figures by counting the number of sides, corners, and square corners. ▪ Identify geometric solids by counting the number of corners, square corners, and edges, and by the shapes of the faces. ▪ Classify, compare, and contrast plane and solid geometric figures (e.g., circle/sphere, square/cube, triangle/pyramid, and rectangle/rectangular solid), using corners, square corners, faces, and edges.	3.18		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Geometry: Two-Dimensional (plane) (Cont'd)	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: geometric shapes, pattern blocks, attribute blocks ▪ DOE Geometry for Elementary School Teachers Staff Development Guide
	▪ Identify and locate examples of a point, line segment, and angle. ▪ Draw line segments and angles, using a ruler or straightedge.	3.19		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Geometry: Three-Dimensional (solid)	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: solid geometric figures - cube, rectangular solid, and cylinder
	▪ Identify by name, models and pictures of plane geometric figures circle, square, rectangle, and triangle) and solid geometric figures (cube, rectangular solid, square pyramid, sphere, cone, and cylinder). ▪ Identify geometric solids by counting the number of corners, square corners, and edges, and by the shapes of the faces. ▪ Classify, compare, and contrast plane and solid geometric figures (e.g., circle/sphere, square/cube, triangle/pyramid, and rectangle/rectangular solid), using corners, square corners, faces, and edges.	3.18		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Geometry: Transformations	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: tracing paper, patty paper, mirrors, Miras, sets of paper and plastic triangles and quadrilaterals
	▪ Locate examples of symmetrical figures, and verify their symmetry by using tracing procedures. ▪ Determine if given figures have a line or lines of symmetry (vertical, horizontal, diagonal), using tracing procedures. ▪ Locate examples of congruent figures and verify their congruency by laying one on top of the other. ▪ Determine if given figures are congruent, using tracing procedures.	3.20		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Statistics	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: objects, graph paper (centimeter, inch and half-inch) ▪ DOE Probability and Statistics for Elementary Teachers Staff Development Guide
	▪ Formulate questions to investigate. ▪ Design data investigations to answer formulated questions, limiting the number of categories for data collection to four. ▪ Collect data, using surveys, polls, questionnaires, scientific experiments, and observations. ▪ Organize data and construct a bar graph on grid paper representing 16 or fewer data points for no more than four categories. ▪ Label bar graphs with a title, a description of each axis, and a key where appropriate. Limit increments on the numerical axis to whole numbers representing multiples of 1, 2, 5, or 10.	3.21		
	▪ Read the information presented on a simple bar or picture graph (e.g., the title, the categories, the description of the two axes, the key). ▪ Read information presented in line plots. ▪ Analyze and interpret information from simple picture and bar graphs, with data points limited to 16 and categories to 4, by writing at least one statement.	3.22		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Statistics (cont'd)	▪ Analyze and interpret information from line plots, with data points limited to 16, by writing at least one statement. ▪ Describe the categories of data and the data as a whole (e.g., data were collected on four types of eggs — scrambled, fried, hard boiled, and egg salad — eaten by students). ▪ Identify parts of the data that have special characteristics, including categories with the greatest, the least, or the same (e.g., most students prefer scrambled eggs). ▪ Select a correct interpretation of a graph from a set of interpretations of the graph, where one is correct and the remaining three are incorrect. For example, a bar graph containing data on four types of eggs — scrambled, fried, hard boiled, and egg salad — eaten by students shows that more students prefer scrambled eggs. A correct answer response, if given, would be that more students prefer scrambled eggs than any other type of eggs.	3.22		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Probability	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: spinners, number cubes, two-color counters, coins, colored tiles ▪ DOE Probability and Statistics for Elementary Teachers Staff Development Guide
	▪ Define probability as the chance that an event will happen. ▪ List all possible outcomes for a given situation (e.g., heads and tails are the two possible outcomes of flipping a coin). ▪ Identify the possible outcomes for a common event, using terms such as *impossible*, *unlikely*, *as likely as unlikely*, *equally likely*, *likely*, and *certain*.	3.23		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Patterns and Functions: Representations & Relationships	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: attribute blocks, pattern block, colored cubes, colored tiles, linking blocks, geometric shapes, cartoons, calculators • DOE Patterns, Functions and Algebra for Elementary Teachers Staff Development Guide
	▪ Recognize repeating and growing numeric and geometric patterns (e.g., skip counting, addition tables, and multiplication tables). ▪ Describe repeating and growing numeric and geometric patterns formed using concrete objects, numbers, tables, and/or pictures, using the same or different forms. ▪ Extend repeating and growing numeric and geometric patterns formed using concrete objects, numbers, tables, and/or pictures, using the same or different forms.	3.24		

Grade 3 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Algebra: Representations and Relations	**The student will use problem solving, mathematical communication, mathematical reasoning , connections, and representation to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: Color tiles ▪ DOE Patterns, Functions, and Algebra Staff Development Guide
	▪ Recognize that the equals sign relates equivalent quantities. ▪ Write number sentences to represent equivalent mathematical relationships (e.g., $4 \cdot 3 = 2 \cdot 6$). ▪ Identify number sentences that show appropriate use of the equals sign.	3.25		